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**Jean-Marie Baland, Pranab Bardhan, and Samuel Bowles (eds.), Inequality, Cooperation, and Environmental Sustainability. Princeton, NJ: Princeton University Press, 2007, 357 pp.**

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## Book reviews

**Jean-Marie Baland, Pranab Bardhan, and Samuel Bowles (eds.), *Inequality, Cooperation, and Environmental Sustainability*. Princeton, NJ: Princeton University Press, 2007, 357 pp.**

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Why is it so difficult to protect the environment? Resource depletion and ecological threats have been scientific and public issues for at least fifty years, yet all this time is apparently not enough to trigger effective countermeasures – indeed even to agree on the very existence and causes of some problems. Basically, we know we are destroying the grounds of our own survival, yet we do very little about it. It is hard to avoid the conclusion that there must be something fundamentally wrong in how we deal with nature. But where does the problem lie precisely? Answers are plenty, ranging from philosophical accounts of the hubris of modern techno-science to Marx-inspired analyses of the planetary reach of a rapacious capitalism. Garrett Hardin's seminal article on the "tragedy of the commons" [Hardin 1968] points to another direction: the micro-foundations of society's self-damaging attitude. His famous argument is that in the absence of adequate institutions, be they property rights or state power, the logic of individual rationality is such that it inevitably leads to the over-exploitation and eventual exhaustion of natural resources. Collective irrationality, in other words, stems from individual rationality in human interaction. If we want to understand the reasons of ecological problems we have to analyse the social mechanisms at work when people relate to each other vis-à-vis the environment – "mechanisms" being understood as causal processes usually hidden at the level of interaction that may account for the observed phenomena [Hedström and Swedberg 1998; Barbera 2004].

This approach has triggered a flood of studies, according to two basic paths: on one side theoretical-experimental research based on rational choice and game theory, which seeks to clarify through mental and laboratory trials the effects of different initial conditions and rules on individual and, consequently, social choice; on the other, empirical-experiential research, which seeks to analyse concrete interactions on particular resources in specified contexts, in order to understand their rules and why they succeed or fail in producing the collective good of nature preservation. Behavioural models have become more and more complex and refined, often including principled or affective elements. The original elegance and the hope to find few encompassing interpretive keys has however got largely lost in the process. At the same time empirical findings have often showed that real world situations are far more intricate and nuanced than envisaged by theoretical reflections or laboratory experiments. A major problem has emerged however, namely the limited translatability of particular forms of regulation to different contexts and, above all, from the local level – that is situations characterized by clearly defined boundaries specifying the resource in question, the people interested in its use, the type of interests involved, the technologies applied and the rules of interaction – to the level of global commons or, more in general, to situations where interests, people, technologies and intervening rules vary in their scale, source and rationale. Of course, this does not mean that understanding what happens at the local, micro-interactive level

is of no value for different levels of analysis of differently sized issues. Hence research on local commons goes on steadily, often producing interesting results.

This is testified by the fresh, valuable insight offered by *Inequality, Cooperation, and Environmental Sustainability*. The book is a collection of essays that originate from a project of the Mac Arthur Foundation-supported Research Network on the Effects of Inequality on Economic Performance. First drafts of the papers, moreover, have been discussed at a workshop funded by the Russell Sage Foundation. As a result, the reader is confronted with contributions that talk to each other with frequent references and comments, rather than the typical collection of individual essays held together by the weak tie of a general topic and some resistible argument from the editors. Just this fact sets the book apart from the average production of edited books. Another plus is that the chosen topic is circumscribed yet obviously relevant: the impact of inequality on environmental sustainability. The subject is not only interesting but also challenging. On the one side inequality almost invariably characterizes real world social action, yet most theoretical efforts and laboratory experiments assume the equal standing of the players in the game as regards their identity, reciprocal acquaintance, resource availability and motivations. Agents, in other words, look more like brains than actors in blood and flesh. On the other side inequality is a complex, multifaceted notion, ranging from wealth and income disparities to differential positions in the local power structure, from gender discrimination to ethnic and social heterogeneity, from asset imbalances (land ownership, number and type of fishing boats etc.) to differences in techniques, skills and patterns of resource use.

If Garrett Hardin is the first, inevitable, reference point of the contributions in the book, Mancur Olson is the second. This because environmental degradation is often the result of cooperative failures. Cooperation is an agent's internalization of some of the externalities imposed to other users and the consequent reduction in his or her use of a resource. Sustainability can thus be read to a major extent in terms of collective action or externality production problems. Inequality, as a result, affects sustainability largely through its effects on cooperation. From this viewpoint agents are confronted with three nested social dilemmas [p. 61]: the tragedy of the commons (multiple appropriators harvesting from a single common-pool resource); the dilemma of spending time and efforts to create a set of rules (that is another public good) in order to avoid the tragedy; and the problem of monitoring such set of rules and sanctioning those who break them (yet another public good dilemma). In this context one can hardly avoid to tackle Olson's remark that – contrary to many assumptions about the link between environmental preservation, economic equality and political democratization – inequality is conducive to the production of collective goods. According to him, “in smaller groups marked by considerable degrees of inequality – that is, in groups of members of unequal ‘size’ or extent of interest in the collective good – there is the greatest likelihood that a collective good will be provided; for the greater the interest in the collective good of any single member, the greater the likelihood that the member will get such a significant proportion of the total benefit from the collective good that he will gain from seeing that the good is provided, even if he has to pay all of the cost himself” [Olson 1965, 34].

Yet, can we take this for granted, always and everywhere? The contributions in the book seek to answer the question offering an articulated, original exploration. As one may expect, the overall reply is that between environmental sustainability and inequal-

ity there is no linear, unequivocal connection. Neither is inequality as such promoting environmental protection, nor is its absence or elimination necessarily leading to any better result in this regard. Inequality may worsen environmental problems by hampering cooperation, while a more equal division of resources may increase degradation by decreasing the value of resources and increasing their consumption. The key message of the book, in other words, is that poverty and wealth or other social imbalances cannot be connected straightforwardly to environmental conditions: much depends on the political and economic institutions handling interaction and the technical character of the environmental asset in question. “Perfect equality among all players is not always optimal. If wealth was equally distributed among all players, the average wealth of contributing players is low and this could reduce the level of collective good. In contrast, concentrating all wealth in the hand of one player will maximize the average wealth of contributors, but will involve significant losses due to the assumed decreasing returns in the individual profit function with respect to the wealth. The optimal distribution of wealth achieves a compromise between these two different forces” [p. 39]. Already complex at theoretical level, the issue becomes more troublesome in real world situations. For a start, inequality may affect the environment in the absence of collective action, impacting directly on the level of consumption. Second, cooperation may result from spontaneous behaviour rather than from collective institutions. Third, cooperation (or the lack of it) is not necessarily a matter of free choice, as usually assumed, but can be a matter of constraint. Four, measuring the environmental outcomes of collective action is not easy, not only because of the existence of different measurement possibilities (stocks, flows, perceptions, etc.) but also because the environment changes in time independently of any action and because the valuation criteria of public goods varies with inequality. Five, collective regulation seeking to address distributive problems has distributive impacts in its turn. Far from providing any policy recipe, therefore, the studies in the book show the complexity of the relation between inequality and collective action and “the need for more context-specific empirical investigations into the different types of alternative mechanisms through which the relevant processes may operate” [p. 8]. Moreover, if the declensions of inequality are manifold, economic ones are the most intensively analysed in the literature and also in this particular work, if anything because they are the most easily measurable; a plus of the book, however, is that it seeks to show that the relationship between income inequality and sustainability is mediated by a number of variables, broadly related to social networks or social capital (trust, sympathy, social distance and communication opportunities etc.). The book seeks also to overcome a typical drawback of research in this field, which often confuses “the means with the ends by inferring from the simple existence of regulatory instruments that the resource concerned is properly managed or conserved” [p. 28].

With the exception of the chapters by Jean-Marie Baland and Jean-Philippe Platteau and by Pranab Bardhan, Maitreesh Ghatak and Alexander Karaivanov – both devoted to elaborating theoretically on the role of inequality in collective action – and of the chapter by Marco Janssen and Elinor Ostrom on which I will come back later, the contributions in the book are based on empirical research, studying specific problems of inequality related to local resources. Pranab Bardhan and Jeff Dayton-Johnson analyze a pair of field studies on community irrigation systems in South India and Central

Mexico, finding evidence against the Olson effect and about the importance of institutionalized rules for cooperation, as well as about the impact of inequality on such rules. Sara Singleton addresses the role of distributional conflicts of salmon fishery in the US Pacific Northwest region, starting from the management institutions of aboriginal people to analyze successes and failures of current co-management practices involving seventeen Native American tribes and state, federal and international regulatory agencies. Her conclusion is that “managing large-scale, complex common pool resources is, at best, a matter of choosing between imperfect alternatives” [p. 155], given especially the current lack of broadly inclusive social networks. Fishery, this time along the Senegalese coastline, is also the topic of Frederic Gaspart and Jean-Philippe Platteau’s chapter. Studying small-scale fishermen’s efforts in regulation during the 1990s they try to come to terms with different sources of inequality: not only income inequality but also diversity in the techniques employed and ethnic and cultural heterogeneity. Wealth inequality seems to promote collective action and technical and skill heterogeneity has been addressed by devising differentiated regulation methods, while the presence of migrant groups represents a problem only when accompanied by polarization into conflicting techniques or patterns of resource use. The role of heterogeneity is central to the chapter of Eswaran Somanathan, Rajagopal Prabhakar and Bhupendra Singh Mehta. The resource in question is forest and the area considered is a Himalayan region in northern India. A significant result of their study is that no correlation emerges between caste, ethnic heterogeneity or gender effect and indicators of collective action or forest cover. This contrasts with the general argument that heterogeneity is detrimental to collective action because tastes for public goods differ across groups, social divisions favour the provision of private benefits to particular groups, and heterogeneity “removes a natural focal point for agreements, simultaneously [making] groups uncertain about other groups’ preferences” [p. 235]. In their turn Jean-Marie Baland, Pranab Bardhan, Sanghamitra Das, Dilip Mookherjee, and Rinki Sarkar address the relationship between firewood collection in Nepal and economic inequality and social heterogeneity, finding that the overall impact of inequality, either through collective action or aggregation effects, is negligible.

Bina Agarwal deals with rural community forestry groups in India focusing on an often neglected type of inequality: the gender one. The latter has some special features: contrary to class, caste or race, gender inequality “dwells not only outside the household but also centrally within it. [Moreover] gender inequalities stem not only from pre-existing differences in economic endowments (...) but also from pre-existing gendered social norms and social perceptions. (...) They can also arise from newly defined rules and procedures that structure the functioning of the governance institution itself” [p. 275]. Of special relevance for gender inequality is the issue of non-voluntary cooperation or non-cooperation, as with “strict female seclusion norms which prevent women from joining a forest protection patrol or from attending village meetings” [p. 276]. As one may expect, “both the pre-existing and the institutionally created gender inequalities are found to reduce women’s ability to cooperate voluntarily in local forest management, as well as their incentives to do so, [triggering] tendencies toward non-cooperation, or toward non-voluntary cooperation and non-voluntary non-cooperation” [p. 307]. Power inequalities surface in this as in many other contributions. James Boyce addresses the issue directly. A problem here is that “data on power distribution are by and large nonexistent, [and]

proxies must be used to measure this dimension of inequality. [... Yet if] power, like utility, is not directly observable, (...) we can infer power from the preferences as revealed by social choice” [p. 314, p. 319]. Boyce distinguishes between different dimensions of power: from power of decision and agenda to influence on value systems and the range of available choices. By reviewing studies on environmental injustice in the US and gathering further evidence from comparative studies at international level he finds support to the hypothesis that “the direction of environmental protection (that is, who is protected from whom) reflects power inequalities related to class, racial and ethnic differences” (p. 325), vulnerability to environmental threats being significantly related to political weakness and low social capital. Even more noteworthy is the conclusion that “inequalities in the distribution of power operate not only to the detriment of specific groups, but also to the detriment of environmental quality in the state as a whole” [p. 333].

The empirical materials on which the chapters build are of various types: survey data, in-depth interviews, secondary analysis of previous research, historical materials, natural resource indicators and so on. Econometric analyses abound yet their meaning is easily accessible to the non-specialized reader. From a methodological viewpoint two chapters stand out from the rest of the book: those of Marco Janssen and Elinor Ostrom and of Juan-Camilo Cardenas. The former focus on the difficult question of how a set of rules and the related monitoring and sanctioning system is developed by the users of a resource. To deal with such issue they use an approach novel to this field, namely an agent-based computational model. While game theory is useful for studying choice strategies and their change within a given set of rules, computational models offer a way to address the emergence and change of the rules themselves. Janssen and Ostrom are especially interested in studying how norms of reciprocity and trust emerge, develop and affect the arrangement of rules and of monitoring and sanctioning tools. Their exercise suggests a pivotal role of a mutual trust involving short-term costs, of the heterogeneity of agents as a possible asset in conditions promoting social learning, and of the type and frequency of interactions. The approach of Cardenas is also remarkable. He, like many others, is interested in studying how material incentives and contextual aspects related to social position, status, sense of belonging and agreed norms affect individual contributions to a public good. What is novel in his approach, however, is that it seeks to combine the controlled structure of a laboratory experiment with the richness of a real world situation. The typical subjects of laboratory experiments are university students. They are available at no cost and above all – as noticed earlier – they can be regarded as good as any other type of subjects since they are treated as brains rather than real persons. In Cardenas’s study, instead, “eighty villagers from three rural communities [in Colombia] participated in ten group sessions of a decision-making exercise emulating a group externality associated with the extraction of a natural resource, involving actual monetary incentives with two stages of several rounds each. In the first stage the participants made decisions with no possibilities to coordinate actions with their group members, while in the second stage they were allowed to have, before each round, three to five minutes of open and nonbinding discussion with the other players in their group. [...] During a typical session, each participant had to decide in each round of the game the number of months (from 0 to 8) she would allocate to extract resources from a jointly used forest. The net earnings (...) increase with individual extraction but decrease with

total group's extraction, giving rise to the commons dilemma" [p. 206, p. 213]. In this way, "the experimental lab was brought to the field so that the human subjects were people who in their daily life made decisions and faced dilemmas similar to those in the experiment" [p. 209]. Results show the importance of inequality in a way that could have hardly been obtained by a traditional experiment. The efficiency of the overall group outcomes is dependent on the existing social distance between the participants. Inversely correlated with the frequency of interactions people had in the past, wealth distances affect reciprocity and learning, limiting "the possibility of getting group communication to be effective for building trust, cooperation, and a commonly shared goal" [pp. 228-229].

To sum up, the book shows that the role of inequality in collective action on the environment is complex. The studies indicate that the Olson argument holds true only within a restrictive sets of assumptions. Inequality may foster the emergence of actors that are able to internalize a large share of the benefits from public goods and are as a consequence motivated to enforce and support cooperation. Inequality, however, may also affect negatively social capital (trust, sympathy, communication), which is often premised on cooperation. Similarly, if there is evidence that "the costs of initiating collective action are largely borne by the economic elite, (...) reduced incentives for the smaller users to participate may undermine regulation" [p. 26]. Various contributions to the book, moreover, show that to be effective regulation has to be fine-grained, capable to respond to the intricate, nuanced relations and distinctions between agents. Cardenas's chapter highlights a feature shared to various extents by the other studies and in my view especially relevant. They take some distance from the psychological framework implicit in much literature on collective action – a framework, as already remarked, that assumes as a basic unit of analysis the human brains, focusing on its features and the conditions affecting its working – and gets closer to a sociological, or socio-anthropological perspective. The latter is more interested in understanding "the context in which the members of a group attempt to solve endogenously a dilemma, [such context being placed either] at the individual level, where each player may regard the others in the group differently due to social positions, status, or sense of belonging to the group, or at the group level, because of agreed norms that affect the members as a whole" [p. 209].

It may be surprising, then, that the literature on trust and social capital is just and scantily mentioned, and that there is no reference whatsoever to the anthropological literature developed especially around the studies of Mary Douglas. The micro-macro link apparently still represents a major problem, with a difficult communication between scholars working within a micro-foundational framework and scholars working within a holistic or systems framework. The book contributors remain faithful to the first school of thought and the reader would search in vain for an attempt to connect the two perspectives. Within this limits *Inequality, Cooperation and Environmental Sustainability* is a highly valuable book, rich in information, innovative in approach, eminently readable (if not suitable to the undergraduate student) and relevant to a wide scholarship interested in environmental commons and sustainability issues.

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